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- 1 [Problem areas and the combination of wall-units to satisfy room relation specification between rooms](#) 80%

Isao Oishi

Proceedings of the ninth design automation workshop on Design automation June 1972

Given the 5-10 year goal of a computer program to design buildings, this paper discusses a proposed outline of problem areas. These problems are considered stubborn but tractable and need be systematically resolved. A program is described which investigates the problem of combining wall-units into a wall which satisfies relation value specification between rooms. Architectural design automation has apparently progressed beyond location programs to the point at which individual re ...

- 2 [A hierarchical boundary model for solid object representation](#) 80%

Leila De Floriani , Bianca Falcidieno

ACM Transactions on Graphics (TOG) January 1988

Volume 7 Issue 1

A new hierarchical model for solid object representation is described. This model, called a hierarchical face adjacency hypergraph (HFAH), is based on a relational description of the object boundary, called a face adjacency hypergraph (FAH), which considers faces as the primary topological entities defining the object boundary. The HFAH consists of a hierarchy of FAHs describing the decomposition of the boundary of an object into form features. In this paper ...

- 3 [Octree based assembly sequence generation](#) 80%

Raymond C. W. Sung , Jonathan R. Corney , Doug E. R. Clark

Proceedings of the sixth ACM symposium on Solid modeling and applications May 2001

This paper describes a system for the automatic recognition of assembly features and the generation of assembly/disassembly sequences. The paper starts by reviewing the nature and use of assembly features. One of the conclusions drawn from this survey is that the majority of

assembly features involve sets of spatially adjacent faces. Two principle types of adjacency relationships are identified and an algorithm is presented for identifying assembly features which arise from “spatial< ...

4 Electromagnetic parasitic extraction via a multipole method with hierarchical refinement 80%

Michael W. Beattie , Lawrence T. Pileggi

Proceedings of the 1999 IEEE/ACM international conference on Computer-aided design
November 1999

The increasing interconnect density and operating frequencies of system-on-a-chip (SOC) designs necessitates extraction of parasitic electromagnetic couplings beyond the localized confines of functional design blocks. In addition, SOC design styles and gridless variable-width routing make it increasingly difficult to use precharacterized library shapes for parasitic extraction. A comprehensive capacitance and inductance extraction solution requires a hierarchical data representation and fas ...

5 Session P13: view-dependent techniques: Integrating occlusion culling with view-dependent rendering 77%

Jihad El-Sana , Neta Sokolovsky , Cláudio T. Silva

Proceedings of the conference on Visualization 2001 October 2001

We present a novel approach that integrates occlusion culling within the view-dependent rendering framework. View-dependent rendering provides the ability to change level of detail over the surface seamlessly and smoothly in real-time. The exclusive use of view-parameters to perform level-of-detail selection causes even occluded regions to be rendered in high level of detail. To overcome this serious drawback we have integrated occlusion culling into the level selection mechanism. Because comput ...

6 Automatic topology optimization for analog module generators 77%

M. Wolf , U. Kleine

Proceedings of the conference on Design, automation and test in Europe February 1998

In this paper a new topology optimization feature of a module generator environment will be presented. The optimization is performed by removing redundant elements of objects already placed and by assessing different layout topologies of a module. This drastically reduces the length of the generator source code, because different topologies need no separate source code, but result automatically.

7 Software for satellite graphics systems 77%

James D. Foley

Proceedings of the annual conference August 1973

This paper has four purposes. Each is addressed in one of the four following sections. In section 2 the motivations for satellite graphics are briefly summarized. Section 3 briefly reviews the past and current technological developments which have made satellite graphics possible. Having set the stage with these two reviews, in section 4 various interactive graphics programming systems which use satellites are presented, evaluated, and found lacking. The basic theme of the section is that h ...

8 A 3-dimensional representation for fast rendering of complex scenes 77%

Steven M. Rubin , Turner Whitted

Proceedings of the 7th annual conference on Computer graphics and interactive techniques

July 1980

Hierarchical representations of 3-dimensional objects are both time and space efficient. They typically consist of trees whose branches represent bounding volumes and whose terminal nodes represent primitive object elements (usually polygons). This paper describes a method whereby the object space is represented entirely by a hierarchical data structure consisting of bounding volumes, with no other form of representation. This homogeneity allows the visible surface rendering to be performed ...

9 PICTUREBALM: A LISP-based graphics language system with flexible syntax and hierarchical data structure 77%

Gary B. Goates , Martin L. Griss , Gary J. Herron

Proceedings of the 7th annual conference on Computer graphics and interactive techniques
July 1980

PICTUREBALM is a portable, interactive, LISP-based language system for graphics applications programming. PICTUREBALM's design and initial experimental implementation is described from the point of view of both the user and the language system implementor. The approach of extending a LISP-based language by adding graphical operations was chosen because many of the recognized requirements for graphics programming languages are standard features of LISP-like systems. Future work is proposed.< ...

10 On storing and changing shape information 77%

I. C. Braid

Proceedings of the 5th annual conference on Computer graphics and interactive techniques
August 1978

A data structure for modelling engineering components and assemblies is described. It is shown how the same structure, slightly extended, can also be used to represent a single component defined as boolean combinations of more primitive shapes. This leads to a unified method of handling both the concise boolean description and the longer explicit description in terms of faces, edges and vertices. The technique permits close control of evaluation from boolean to explicit description, and fac ...

11 Three-dimensional representations for computer graphics and computer vision 77%

Norman Badler , Ruzena Bajcsy

Proceedings of the 5th annual conference on Computer graphics and interactive techniques
August 1978

Representing complex three-dimensional objects in a computer involves more than just evaluating its display capabilities. Other factors are the uses and costs of the representation, what operations can be performed on it and, ultimately, how useful it is for computer recognition or description or three-dimensional objects. Many of the questions which are posed arise from the joint consideration of computer graphics and computer vision, and a specific representation hierarchy is proposed for ...

12 Texture tile considerations for raster graphics 77%

William Dungan , Anthony Stenger , George Sutt


Proceedings of the 5th annual conference on Computer graphics and interactive techniques
August 1978

As a technique for rendering texture in images, texture tiles meet the subjective criterion of visual acceptability. A texture tile is a digital array of stored texture information that is replicated on a

surface within an image. The purpose is to give the surface a textured appearance. The repetitive pattern inherent in the tiling approach can be suppressed. A texture tile must not exhibit macropatterns to avoid this problem. Properties that the mapping algorithm must include are oriented ...

13 Automatic generation of computer graphics languages

77%


 Gregory J. Suski

The papers of the ACM symposium on Graphic languages April 1976

This paper describes a system currently under development at Northwestern University which allows a user of a computer graphics system to generate specialized graphics programming languages which are particularly suited to a user's own needs and expertise. Termed a Language Generation System (LGS), it differs from the more traditional compiler-compiler and extensible language systems in the ease and speed of language specification and generation and also in the actual method of language spe ...

14 SLIM-the translation of symbolic layouts into mask data

77%


 A. E. Dunlop

Proceedings of the seventeenth design automation conference on Design automation June 1980

A new form of symbolic layout for integrated circuits is coupled with a mask compaction procedure which removes excess space while guaranteeing that all design rules are met. Tradeoffs between X and Y compaction are made based on critical path information. Two types of compaction are used to minimize mask area and computer run-time. Additional procedures reduce mask area by inserting jogs at strategic locations in the layout. A partitioned data base is used to store mask data in a hierarchi ...

15 ABLE: A LISP-based layout modeling language with user-definable procedural models for storage/logic array design

77%


 Gary B. Goates , Suhas S. Patil

Proceedings of the eighteenth design automation conference on Design automation June 1981

ABLE, an array-based linguistic editor, is a layout modeling language for storage/logic arrays (SLA's) that is based on the LISP programming language. This paper describes ABLE's design, presents an ABLE layout program, and evaluates ABLE's usefulness in SLA-based circuit design. ABLE embodies a linguistic approach to computer-aided design (CAD) for very large scale integrated (VLSI) circuits; digital system designers can represent SLA-based integrated circuits as relatively abstract and hi ...


16 Poster session: Cusp modeling for 5-axis surface machining

77%

 Paul J. Gray , Fathy Ismail , Sanjeev Bedi

Proceedings of the eighth ACM symposium on Solid modeling and applications June 2003

Gouge checking and gouge measuring are essential parts of 5-axis tool-positioning strategies. To evaluate the quality of a tool path (i.e. the remaining material, commonly referred to as cusps), machining tests must usually be performed. If the tests prove to be unsatisfactory, new tool paths must be generated and run. In this paper, a new approach for modeling cusps is presented which makes use of recent advances in vector algebraic computation of swept volumes. The method uses the computer's g ...

17 Representation conversions: Exploiting self-similarity in geometry for voxel based solid modeling 77% Eric Parker , Tushar Udeshi**Proceedings of the eighth ACM symposium on Solid modeling and applications** June 2003

Voxel-based modeling techniques are known for their robustness and flexibility. However, they have three major shortcomings: (1) Memory intensive, since a large number of voxels are needed to represent high-resolution models (2) Computationally expensive, since a large number of voxels need to be visited (3) Computationally expensive isosurface extraction is needed to visualize the results. We describe techniques which alleviate these by taking advantage of self-similarity in the data making vox ...

18 SLIM - The translation of symbolic layouts into mask data

77%

 A. E. Dunlop**Papers on Twenty-five years of electronic design automation** June 1988**19 Special issue on spatial database systems: Management of multidimensional discrete data**

77%


 Peter Baumann**The VLDB Journal — The International Journal on Very Large Data Bases** October 1994

Volume 3 Issue 4

Spatial database management involves two main categories of data: vector and raster data. The former has received a lot of in-depth investigation; the latter still lacks a sound framework. Current DBMSs either regard raster data as pure byte sequences where the DBMS has no knowledge about the underlying semantics, or they do not complement array structures with storage mechanisms suitable for huge arrays, or they are designed as specialized systems with sophisticated imaging functionality, but n ...

20 A knowledge-based decision support system for flexible manufacturing

77%

 D. H. Norrie , R. Fauvel , B. R. Gaines , M. Mowchenko**Proceedings of the second international conference on Industrial and engineering applications of artificial intelligence and expert systems - Volume 1** June 1989

A decision support system is under development for planning in flexible manufacturing, using a consortium of knowledge-based systems utilizing expert system, database, and simulation techniques. An object-oriented approach is incorporated. There are six basic modules: machine selection optimizer; database; production flow analyzer; rapid modelling techniques system; FMS simulator; supervisor. The prototype of the machine selection optimizer has been developed, tested, and is under ...

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21 [Real-time rendering: Time-critical rendering of discrete and continuous levels of detail](#) 77%

[A](#) Christopher Zach , Stephan Mantler , Konrad Kärner

Proceedings of the ACM symposium on Virtual reality software and technology November 2002

We present a novel level of detail selection method for real-time rendering, that works on hierarchies of discrete and continuous representations. We integrate point rendered objects with polygonal geometry and demonstrate our approach in a terrain flyover application, where the digital elevation model is augmented with forests. The vegetation is rendered as continuous sequence of splats, which are organized in a hierarchy. Further we discuss enhancements to our basic method to improve its scala ...

22 [Partial entity structure: a compact non-manifold boundary representation based on partial](#) 77%

[A](#) [topological entities](#)

Sang Hun Lee , Kunwoo Lee

Proceedings of the sixth ACM symposium on Solid modeling and applications May 2001

Non-manifold boundary representations have gained a great deal of popularity in recent years and various representation schemes have been proposed because they allow an even wider range of objects for various applications than conventional manifold representations. However, since these schemes are mainly interested in describing sufficient adjacency relationships of topological entities, the models represented in these schemes occupy too much storage space redundantly although they are very e ...

23 [Set operations on polyhedra using binary space partitioning trees](#) 77%

[A](#) William C. Thibault , Bruce F. Naylor

ACM SIGGRAPH Computer Graphics , Proceedings of the 14th annual conference on Computer graphics and interactive techniques August 1987

Volume 21 Issue 4

- 24 Representations for space planning 77%
Charles M. Eastman
Communications of the ACM April 1970
Volume 13 Issue 4
Problems involving the arrangement of objects in two- or three-space where the objective function primarily consists of derivatives of the distance between objects or their arrangement are called space planning problems. The representational requirements for this problem area are defined and compared with current computer graphic languages. Four alternative data structures that allow automated space planning are described and compared.
- 25 The Quadtree and Related Hierarchical Data Structures 77%
Hanan Samet
ACM Computing Surveys (CSUR) June 1984
Volume 16 Issue 2
- 26 A Survey of Data Structures for Computer Graphics Systems 77%
Robin Williams
ACM Computing Surveys (CSUR) January 1971
Volume 3 Issue 1
This is a survey of a data structures and their use in computer graphics systems. First, the reasons for using data structures are given. Then the sequential, random, and list organizations are discussed, and it is shown how they may be used to build complex data structures. Representative samples of languages specifically designed for creating and manipulating data structures are described next. Finally some typical computer graphics systems and their data structures are described. It is a ...
- 27 Time critical isosurface refinement and smoothing 77%
V. Pascucci , C. L. Bajaj
Proceedings of the 2000 IEEE symposium on Volume visualization October 2000
- 28 Efficient content-based indexing of large image databases 77%
Essam A. El-Kwae , Mansur R. Kabuka
ACM Transactions on Information Systems (TOIS) April 2000
Volume 18 Issue 2
Large image databases have emerged in various applications in recent years. A prime requisite of these databases is the means by which their contents can be indexed and retrieved. A multilevel signature file called the Two Signature Multi-level Signature File (2SMLSF) is introduced as an efficient access structure for large image databases. The 2SMLSF encodes image information into binary signatures and creates a tree structures can be efficiently searched ...
- 29 R-tree implementation using branch-grafting method 77%
Thomas Schreck , Zhengxin Chen
Proceedings of the 2000 ACM symposium on Applied computing March 2000
- 30 Constraints in constructive solid geometry 77%
Jaroslaw R. Rossignac

Proceedings of the 1986 workshop on Interactive 3D graphics January 1987

The success of solid modelling in industrial design depends on facilities for specifying and editing parameterized models of solids through user-friendly interaction with a graphical front-end. Systems based on a dual representation, which combines Constructive Solid Geometry (CSG) and Boundary representation (BRep), seem most suitable for modelling mechanical parts. Typically they accept a CSG-compatible input (Boolean combinations of solid primitives) and offer facilities for parameterizi ...

31 Real-time rendering of deformable parametric free-form surfaces

77%


 Frederick W. B. Li , Rynson W. H. Lau

Proceedings of the ACM symposium on Virtual reality software and technology December 1999

Deformable objects are required to improve the realism of virtual reality applications. They are particularly useful in modeling clothes, facial expression, human and animal characters. A common method to render these objects is by tessellation. However, the tessellation process is computationally very expensive. If the object deforms, we need to retessellate the surface every frame, as its shape changes from one frame to the next. This computational burden poses a significant challenge to ...

32 Offsetting operations on non-manifold boundary representation models with simple geometry


77%

 Sang Hun Lee

Proceedings of the fifth ACM symposium on Solid modeling and applications June 1999

33 An analysis of geometric modeling in database systems

77%

 Alfons Kemper , Mechtild Wallrath


ACM Computing Surveys (CSUR) March 1987

Volume 19 Issue 1

The data-modeling and computational requirements for integrated computer aided manufacturing (CAM) databases are analyzed, and the most common representation schemes for modeling solid geometric objects in a computer are described. The *primitive instancing* model, the *boundary representation*, and the *constructive solid geometry* model are presented from the viewpoint of database representation. Depending on the representation scheme, one can apply geometric transformation ...

34 A structural representation for VLSI design

77%


 Richard Barth , Bertrand Serlet

Proceedings of the 25th ACM/IEEE conference on Design automation June 1988

This paper presents a data structure for representing the structure of VLSI circuits and basic operations for manipulating this data structure. Its features include conceptual integrity, rich expressive power, and high extensibility. It forms the nucleus of a design analysis and synthesis system which has been used to design several major chips.

35 Boundary element method macromodels for 2-D hierachical capacitance extraction

77%


 E. Aykut Dengi , Ronald A. Rohrer

Proceedings of the 35th annual conference on Design automation conference May 1998

We presen t a new algorithm for computing the capacitance of three-dimensional perfect electrical conductors of complex structures. The new algorithm is significantly faster and uses muc h less memory than previous best algorithms, and is kernel independent. The new algorithm is based on


a hierarchical algorithm for the n-body problem, and is an acceleration of the boundary-element method for solving the integral equation associated with the capacitance extractio ...

36 A constraint-based manipulator toolset for editing 3D objects 77%

 C. Hsu , G. Alt , Z. Huang , E. Beier , B. Brüderlin


Proceedings of the fourth ACM symposium on Solid modeling and applications May 1997

37 OBBTree: a hierarchical structure for rapid interference detection 77%

 S. Gottschalk , M. C. Lin , D. Manocha


Proceedings of the 23rd annual conference on Computer graphics and interactive techniques August 1996

38 Conceptual graphs in constraint based re-design 77%

 O. W. Salomons , F. van Slooten , F. J. A. M. van Houten , H. J. J. Kals


Proceedings of the third ACM symposium on Solid modeling and applications December 1995

39 Towards the design and development of a new architecture for Geographic Information Systems 77%

 Niki Pissinou , Kia Makki , E. K. Park

Proceedings of the second international conference on Information and knowledge management December 1993



40 Interactive design, analysis, and illustration of assemblies 77%

 Elena Driskill , Elaine Cohen

Proceedings of the 1995 symposium on Interactive 3D graphics April 1995

We present an interactive approach for helping designers describe, revise, analyze, and illustrate assemblies of mechanical parts within the context of a common data structure and set of assembly features. This paper describes an implementation used to test the validity of these ideas, which has been integrated into an existing spline-based geometric modeling system. Several interactive tools have been implemented. An assembly planner allows the user to design the assembly structu ...

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Computer Applications in Power, IEEE, Volume: 2 Issue: 1, Jan. 1989

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[\[Abstract\]](#) [\[PDF Full-Text \(476 KB\)\]](#) **IEEE JNL****2 A fast hierarchical algorithm for three-dimensional capacitance extraction***Weiping Shi; Jianguo Liu; Kakani, N.; Tiejun Yu;*

Computer-Aided Design of Integrated Circuits and Systems, IEEE Transactions on, Volume: 21 Issue: 3, March 2002

Page(s): 330 -336

[\[Abstract\]](#) [\[PDF Full-Text \(163 KB\)\]](#) **IEEE JNL**